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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,547	09/10/2003	Gianfranco Verbana	Q76629	3241

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SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER	
LIU, LI	

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 10/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/658,547	VERBANA ET AL.	
	Examiner	Art Unit	
	Li Liu	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Javitt et al (US 6,154,297).

1). With regard to claim 1, Javitt et al discloses a method (Figure 1) for detecting a drop in the power received by an optical receiver (OR), for free-space optical telecommunications systems, and for identifying the cause of such a drop in the power received, the method including the step of obtaining a value of power concerning the desired signal (S_{data}) (detected by 50 Highspeed photodetector) on the optical axis of the receiver and being characterized by the following steps:

obtaining at least two additional values of power (S_X, S_{-X}, S_{+X}; S_{-Y}, S_{+Y}) corresponding to areas (F_{-X}, F_{+X}; F_{-Y}, F_{+Y}) that are opposite to said optical axis (Figure 2, the Photodetector Array is a Quad Cell, four values of power values are obtained, column 2 line 50-64); and

calculating at least one difference in power (ΔX, ΔY) between said at least two additional values of power (column 2, line 61-64, the signal differences are used to reposition the transceiver).

2). With regard to claim 2, Javitt et al discloses that in the event of a drop in the power received, a difference in power greater than a predetermined value (e) or smaller than the negative of said predetermined value (-e) is indicative of a mechanical loss of alignment (column 2, line 54-59, if transceiver is properly aligned with the incoming light, each of segments 82 receives approximately the same amount of light. If transceiver 10 becomes misaligned, different amounts of light will be received by the different segments 82 of quad sensor 80, Figure 2; since the power differences are used for adjustment, it is inherent that a predetermined value of power different must have been used to determine the misalignment).

3). With regard to claim 3, Javitt et al discloses the step of providing a tracking system (positioning apparatus column 2 line 62) for restoring mechanical alignment, said tracking system being responsive to the difference in power (ΔX, ΔY) (transceiver positioning apparatus uses the power differences to reposition the transceiver, column 2, line 61-64).

4). With regard to claim 6, Javitt et al discloses that the step of obtaining at least two additional values of power includes the step of obtaining four values of power (S_{-X}, S_{+X}; S_{-Y}, S_{+Y}) in four corresponding areas (F_{-X}, F_{+X}; F_{-Y}, F_{+Y}) equidistant from the optical axis and arranged in a cross or X-shaped configuration (Figure 2, the Photodetector Array is a Quad Cell; the four photodetector segments are in a cross or X-shaped configuration. Four values of power values are obtained, column 2 line 50-64).

5). With regard to claim 8, Javitt et al discloses Optical receiver (OR) (Figure 1) for free-space optical telecommunications systems capable of detecting a drop in the power received and of identifying the cause of said drop in the power received, the

receiver including a first light detector (RX_{data}) (50 Highspeed photodetector) for obtaining a value of power referred to the required signal (S_{data}) on the optical axis of the receiver and being characterised in that it also includes:

at least two additional light detectors for obtaining at least two corresponding additional values of power (S_{-X}, S_{+X}; S_{-Y}, S_{+Y}) in areas (F_{-X}, F_{+X}; F_{-Y}, F_{+Y}) that are opposite to said optical axis (Figure 2, the Photodetector Array is a Quad Cell, four values of power values are obtained, column 2 line 50-64); and

processing means (FPGA) for calculating a difference in power (ΔX, ΔY) between said at least two additional values of power (column 2, line 61-64, the signal differences are used by transceiver positioning apparatus).

6). With regard to claim 9, Javitt et al discloses that system also includes a tracking system (transceiver positioning apparatus, column 2 line 61-62) for restoring mechanical alignment, said tracking system being responsive to the difference in power in such a way that a difference in power greater than a predetermined value (e) or smaller than the negative of said predetermined value (-e) is indicative of a loss of mechanical alignment (column 2, line 57-64, since the power differences are used for adjustment, it is inherent that a predetermined value of power different must have been used to determine the misalignment).

7). With regard to claim 11, Javitt et al discloses that said at least two additional values of power are obtained for areas that are equidistant from the optical axis (Figure 2, the Photodetector Array is a Quad Cell, the four photodetector segments are equidistant from the optical axis. four values of power values are obtained, column 2 line 50-64).

8). With regard to claim 12, Javitt et al discloses that said areas equidistant from the optical axis are four and are arranged in a cross or X-shaped configuration (Figure 2, the Photodetector Array is a Quad Cell, the four photodetector segments are in a cross or X-shaped configuration, column 2 line 50-64).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 7 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Javitt et al (US 6,154,297) in view of Degura (US 5,684,614).

Javitt et al discloses disclose all of the subject matter as applied in claims 1 and 8 above. And Javitt et al further discloses that the if transceiver becomes misaligned, different amounts of light will be received by the different segments of quad sensor, and the signal differences can be used by transceiver positioning apparatus to reposition the transceiver until it is again properly aligned with the incoming light.

But Javitt et al does not explicitly state that the first difference in power (ΔX) is along **an axis (X)** that connects two first areas (F_{-X}, F_{+X}) and intersects the optical axis and a second difference in power (ΔY) along **an axis (Y)** that connects two second areas (F_{-Y}, F_{+Y}) and intersects the optical axis.

However, Degura, in the same field of endeavor, discloses a similar pointing and tracking system (Figure 1 and 4) for free spacing communication, in which the first difference in power (X DIRECTION ERROR VOLTAGE in Figure 1 and 4) is along an axis (X) that connects two first areas and intersects the optical axis and a second difference in power (Y DIRECTION ERROR VOLTAGE in Figure 1 and 4) along an axis (Y) that connects two second areas and intersects the optical axis.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the power differences calculated in X and Y axis taught by Degura to the system and method of Javitt et al so that the misalignment can be easily evaluated and the transceiver can be conveniently adjusted.

5. Claims 4, 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Javitt et al (US 6,154,297) in view of Neff et al (US 2003/0090765).

Javitt et al discloses all of the subject matter as applied in claims 1, 8, 11 and 12 above. But Javitt does not discloses that in the event of a drop in the power received, a difference in power smaller than a predetermined value (e) is indicative of causes external to the telecommunications system; and a step of controlling an automatic power control (ATPC) so as to increase the transmission power correspondingly.

However, Neff et al, in the same field of endeavor, discloses a FSO communication system, in which the tracking system is also used to monitor the power levels and to control the transmitted signal power (Figure 8, 314 is the tracking receiver with a quad cell [0062], 316 is the tacking controller [0060], and the power controller is also with the controller 316 [0064]). Neff et al also uses the qual cell ([0062]) to evaluate the misalignment; it is inherent that a predetermined value of power different must have

been used to determine the misalignment (Figure 11B). And an automatic power control and means (316 in Figure 8) for instructing said automatic power control so that, if there it is a difference in power smaller than predetermined value, it will increase the power of transmission accordingly (Figure 11D). The Neff et al's transceivers are ideal for communicating data over a free-space optical link and can do so through substantially all weather conditions, including rain, snow, heat and in particular fog ([0065]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the automatic power control method taught by Neff et al to the system and method of Javitt et al so that the system can work in all weather conditions.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Javitt et al (US 6,381,055) discloses a transceiver positioning in FSO network in which the alignment is monitored, and the reasons of power losses are analyzed.

Shelby (US 5,953,146) discloses a method and apparatus for tracking alignment in free space optical communications.

Britz (US 5,790,291) discloses a system of beam steering and tracking of laser communication links by dual-quadrant tracker and photodiode assembly.

Plett (US 6,661,546) discloses a free space (FSO) receiver includes an illumination sensing unit with multiple illumination apertures.

Wittenberger et al (US 2002/0208597) discloses a fee space communication system for minimizing interference from physical limitations and the environment that includes at least a pair of optical links wherein each link includes a steered-beam transmitter assembly and a steered-beam receiver assembly.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Li Liu whose telephone number is (571)270-1084. The examiner can normally be reached on Mon-Fri, 8:00 am - 5:30 pm, alternating Fri off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Vanderpuye can be reached on (571)272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KENNETH VANDERPUYE
SUPERVISORY PATENT EXAMINER

Li Liu
September 28, 2006